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Developing a National Certification System for Building Materials in China

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Importance of Testing, Rating and Labeling Building Materials

- ▶ Testing, rating and labeling system – a fundamental building blocks of building EE policies
 - Info on performance of building materials: makes policies easier to implement
 - Different test protocols → 10-15% differences in stated performance levels
 - Difference in quality of testing → even greater discrepancies

Design phase	Construction phase
Designer specifies product that meets code. Building inspector reviews building design for compliance.	Construction company installs specified material. Building inspector matches the label to the approved, design.



Importance of Improving Energy Efficiency in Buildings

- ▶ Improving energy efficiency in buildings has a plethora of economic and environmental benefits
 - Especially important in China, as it has the largest construction market and is second largest building energy consumer in the world
 - China's 13th Five-Year Plan requires energy efficiency improvement in the building's sector





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Core Elements of a Certification System



Testing



Certification



Inspecting



Accreditation

- ▶ Certification body can be the government, independent or nonprofit organizations that certify labs have the necessary equipment and skills to test materials properly





Why a National System?

- ▶ Increases market opportunities for energy-efficient products and expands market access for companies
 - Can also increase market value in international trade
- ▶ Can relieve problems that plague smaller-scale systems, such as
 - Overloaded capacity
 - Fragmented management of the testing system
 - Lack of material testing for rural buildings
 - Limited coverage in quality control and annual inspection
- ▶ Allows for more cohesive strategy at the national level
 - Government is better positioned to give incentives





Certification System in the U.S.

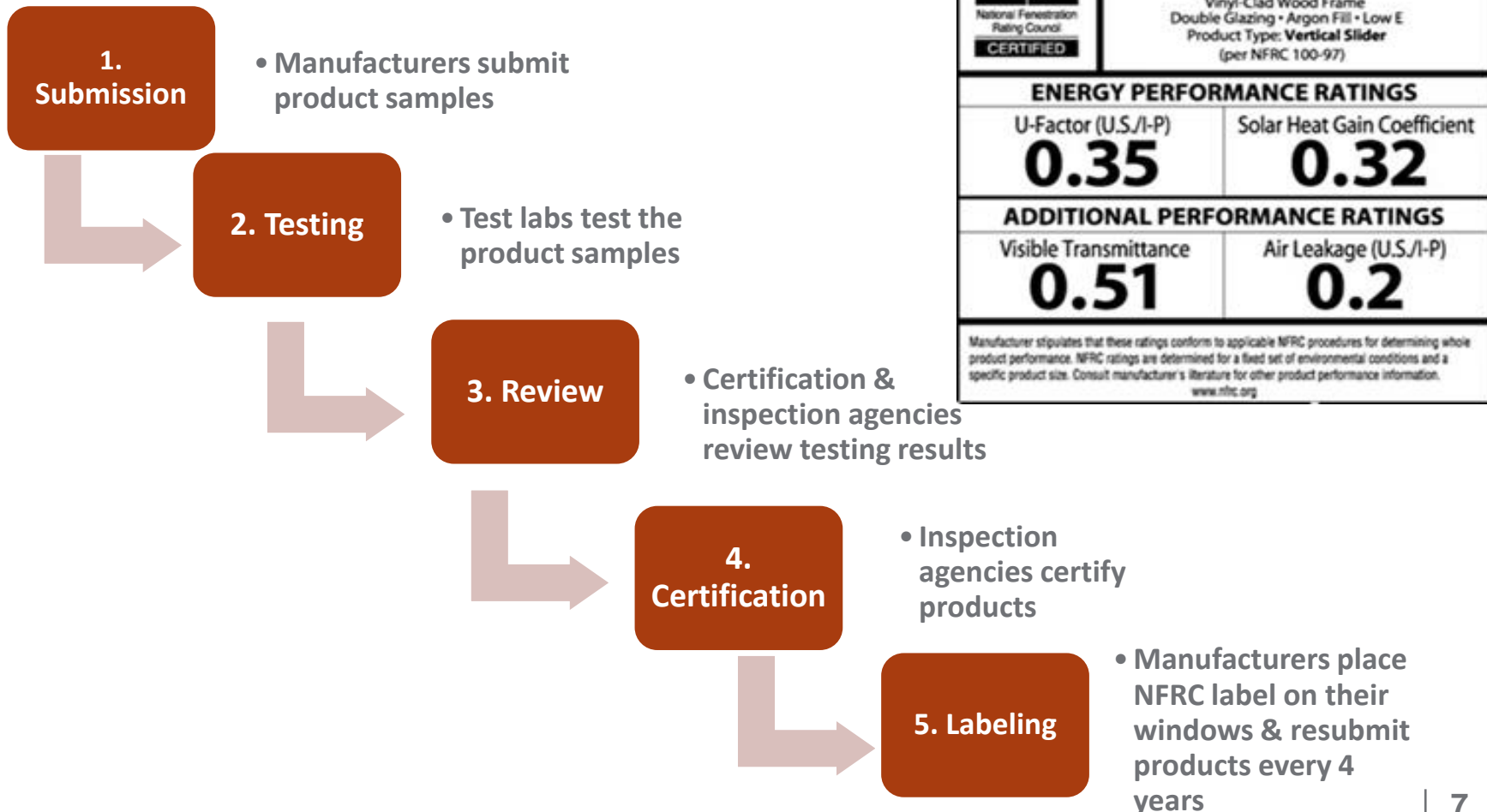
- ▶ U.S. certification system is market-driven and highly diversified
 - There are multiple standards developing organizations, each working in response to a specific marketplace need
 - For example, NFRC for windows, FTC governs insulation certification
- ▶ Building materials are tested, rated, and certified at the national level
 - By private organizations or government
- ▶ Some certification systems linked to government incentives
 - Federal tax credit for adding ENERGY STAR-certified windows, insulation, etc. to existing homes





Example: Windows in the U.S.

- ▶ Oversight and Coordination Agency: NFRC
- ▶ Product Certification & Rating Process:

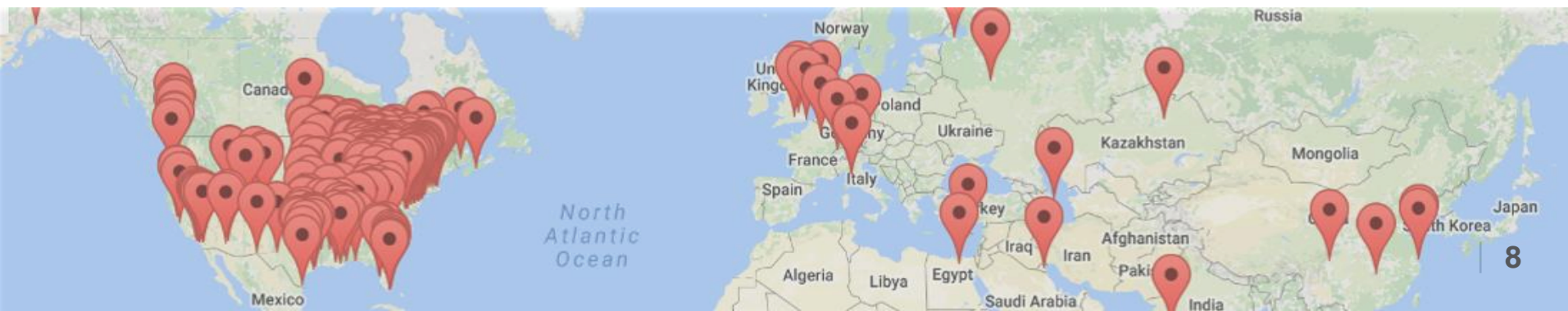


Example: Insulation Testing and Labeling in the U.S.

- ▶ Performance testing done according to American Society for Testing and Materials (ASTM) standards by accredited laboratories
 - ASTM International develops test standards through a stakeholder process
 - Also provides standards for the certification of test labs
 - Organizations can do the required testing themselves or contract an independent 3rd party laboratory
- ▶ Unlike with windows, testing and labeling are run by separate organizations
- ▶ U.S. Federal Trade Commission oversees residential insulation labels under federal law (but in practice, all insulation receives an FTC label)

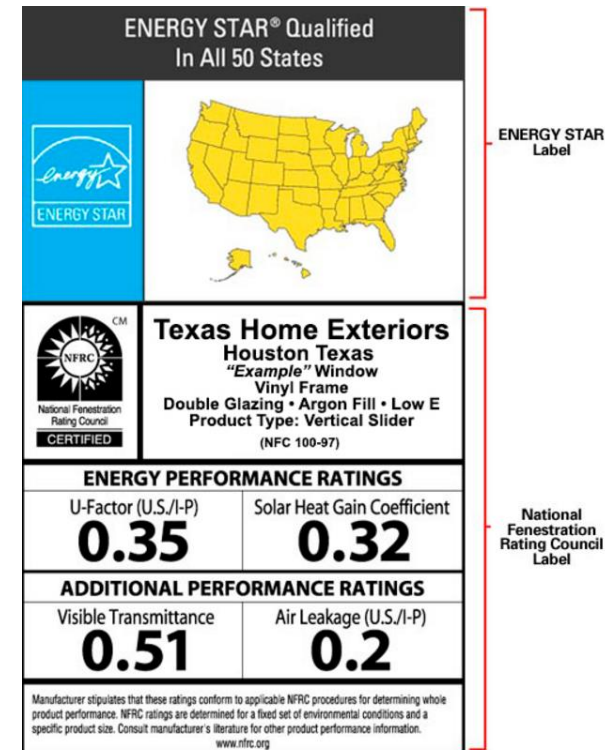


Labs that will certify according to ASTM standards; source: astm.org



Coexistence of ENERGY STAR and NFRC Certification Systems

- ▶ NFRC is a third-party non-profit organization that sponsors certified rating and labeling to help consumers compare the performance of windows, doors, and skylights
- ▶ ENERGY STAR qualified windows, doors, and skylights must be tested according to NFRC procedures
- ▶ ENERGY STAR enables customers to distinguish between “good” and “bad” products



Source:

kapitanthesidingman.files.wordpress.com

Linking Certifications to Building Energy Efficiency Programs

- ▶ Certified products are an integral tool for many building EE programs
 - New buildings: LEED, Building Energy Codes
 - Retrofit: Federal Energy Management Program (FEMP), Weatherization Program
 - For example, ENERGY STAR-certified products used in the FEMP to enable federal agencies to purchase energy-efficient products

PRODUCT CATEGORY ▲	PRODUCT TYPE	★
Whole-Home Gas Tankless Water Heaters (Residential)	Heating and Cooling	★
Windows, Doors, and Skylights	Other	★

★ ENERGY STAR

Source: energy.gov





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Roadmaps: ANSI Process

- ▶ **Stakeholder driver process to coordinate on all standards for energy efficiency in buildings**
- ▶ **Recommendations in 5 standards areas:**
 - building energy and water assessments (including product standards)
 - system integration
 - building energy rating, labeling, and simulation
 - evaluation, measurement, and verification
 - workforce credentialing



STANDARDIZATION ROADMAP

Energy Efficiency in the
Built Environment



Key Messages

- ▶ Certification systems with national or international reach come with important advantages
- ▶ Robustness of testing protocols helps ensure authenticity
- ▶ Coexistence of certification systems on same product class can be mutual beneficial for both the certifying bodies and the customer
- ▶ Linking certification systems to building energy efficiency programs is also mutually beneficial and should be a primary goal





Questions for Discussion

- What are the areas that U.S. and China can collaborate to improve building material testing and certification?
- How can we encourage stakeholders to collaborate on developing a road map for building materials?
- How can we integrate building material certification systems with building energy efficiency programs?



Thank you!

Questions?

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